

**VALUE ENGINEERING CHANGE PROPOSAL  
MISSOURI DEPARTMENT OF TRANSPORTATION**

Date 4/19/10

Contract ID 100122-202

Job No. J2P0779C

County RANDOLPH 24

Original Bid Cost \$ 2,012,213.80

Contractor APAC-MISSOURI, INC.

By DAVID B. TAG, P.E.

Designed By APAC-MISSOURI, INC.

Phone (573) 449-0886

VECP# 10-44 (to be completed by C.O.)

VECP ☐ or VECP/PDU ☐

**1. Description of existing requirements and proposed change(s). Advantages/Disadvantages**

The current plan is to perform the unbonded overlay of the Bus. <sup>63</sup> 24 intersection is 4 stages over 4 separate 5-day periods. This VE Proposal is to perform the overlay in 2 stages rather than 4 by closing the adjacent section of Bus. 63 while each half of Route 24 is being overlaid. The advantages of this are labor and equipment savings by combining two activities into one for the coldmilling, geotextile, and overlay. Also, the total duration of the project will be reduced from 4 weeks to 2 weeks. The disadvantages are a road closure that limits local access to Route 24.

**2. Estimate of reduction in construction costs.** \$ 30,284.00 A detailed summary is attached.

**3. Prediction of any effects the proposed change(s) will have on other department costs, such as maintenance and operations.**

MoDOT will have increased public relations duties as a result of limiting Bus. Route 63 access to Route 24 for 2 weeks.

**4. Anticipated date for submittal of detailed change(s) of items required by Section 104.6 of the Specifications.**

April 19, 2010

(date)

**5. Deadline for issuing a change order to obtain maximum cost reduction, noting the effect of contract completion time or delivery schedule.**

April 30, 2010

(date)

Field Surveying will be modified if staging is changed

(effect)

**6. Dates of any previous or concurrent submission of the same proposal.**

None

(date and/or dates)



**Additional Comments:**

MoDOT is responsible for additional CMS boards or construction signs if necessary to designate the road closure.

**\*\* Portion Below This Line To Be Filled Out by MoDOT \*\*****Comments:**

I feel that this proposal should be approved based on the cost savings and the decreased construction time. No matter how this intersection is constructed there will be substantial inconvenience to the traveling public. I feel that the added inconvenience caused by constructing this area in two parts rather than four is far outweighed by the decreased overall construction time.

Jeff Gander

4/29/2010

Submitted By Resident Engineer

Date

**Comments:**

We support this proposal. The closure of this intersection to North/South traffic will be a major inconvenience to local motorists, but there are good alternate routes (state and city) for that movement. The proposal maintains East/West traffic through the intersection at all times, which is important since there are no other reasonable detours that can handle the volume of E/W traffic. In addition to being less costly, this proposal would cut the construction time in half.

Dennis Brucks



Approval  
Recommended

Dan Niec

4/29/2010



Rejection  
Recommended

District Engineer

Date

**Comments:**

Approval  
Recommended



Rejection  
Recommended

Federal Highway Administration  
Required for FHWA Full Oversight Projects

Date

**Comments:**

JPD - 4/30/2010



Approval



Rejection

David D. Coates

State Construction and Materials Engineer

4-30-10

Date

Distribution: Resident Engineer, Project Manager, District Construction & Materials Engineer, State Construction & Materials Engineer, Value Engineering Administrator - MoDOT, P. O. Box 270, Jefferson City, MO 65102



# Route 24, Randolph Co., - J2P0779C - VE Proposal #2 Item Summary - - 2 Stages

## Items to be affected

Item #	Item Description	Qty. affected	Unit	Cost	New Cost	Saved	What will be saved
90	Unbonded Concrete Overlay	6951.6	SY	\$ 20.96		\$ 145,705.54	Existing Item - Cost for 4 stages of construction
270	Coldmilling >3" Thick	7352	SY	\$ 5.01		\$ 36,833.52	Existing Item - Cost for 4 stages of construction
290	Geotextile Fabric, Type 1	6952	SY	\$ 2.33		\$ 16,198.16	Existing Item - Cost for 4 stages of construction
500X	Unbonded Concrete Overlay	6951.6	SY		\$ 18.35	\$ (127,561.86)	New Item - Cost for 2 stages of construction
500X	Coldmilling >3" Thick	7352	SY		\$ 3.51	\$ (25,805.52)	New Item - Cost for 2 stages of construction
500X	Geotextile Fabric, Type 1	6952	SY		\$ 2.17	\$ (15,085.84)	New Item - Cost for 2 stages of construction
					<b>TOTAL</b>	<b>\$ 30,284.00</b>	

VE SPLIT \$ 15,142.00





An Oldcastle Company

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Friday, April 23, 2010

Mr. Jeffrey L. Gander, R.E.  
MoDOT Macon Project Office  
26824 US Highway 63  
P.O. Box 254  
Macon, MO 63552

RE: Rte. 24, Randolph County  
Job No. J2P0779C & J2P0779D  
Contract ID: 100122-202

Dear Mr. Gander:

Here are the additional details you have requested concerning the VE Proposal on the above referenced project:

- 1) Yes – JSP N and JSP O should be changed by replacing the word "quadrants" with the word "halves". We intend to perform this work within the 5 calendar days specified and do expect LD's to be charged after 5 calendar days.
- 2) This VE savings is created by combining two quadrants of work into one continuous operation which creates the labor and equipment savings which allows for the lower unit prices. I do not expect quantities to change by this VE. Here is a breakdown of these costs for your information:

### Project Mobilization

There is no savings to project mobilization since that cost is to transport the equipment to the site from Columbia or another project and back to Columbia or another project. Modifying the duration of the project from 4 weeks to 2 weeks does not reduce our trucking costs since the equipment would not leave the site. It does affect the coldmilling mobilization, but that cost is charged to the milling item and will be reflected in the savings of the milling item cost reduction.

### Item 80 – Unbonded Concrete Overlay

This is the cubic yard item. It contains only concrete material cost. There will be no changes to the amount of material required and no changes to this item.

### Item 90 – Unbonded Concrete Overlay Placing

This item contains the labor and equipment necessary to perform the overaly. The original plan was 3.5 shifts per quadrant (140 crew hours in total for 4 quadrants x 3.5 shifts per quadrant x 10 hours per shift) with a crew comprised of 1 foreman, 2 carpenter, 2 skilled laborers, 4 general laborers, and 1 operator with 1 boom truck at 50% utilization, 1 concrete finishing machine with 33% utilization, 1 portable generator with 100% utilization, 4 light plants with 85% utilization, 1 pickup truck with 100% utilization, 1 rubber tire loader with 42% utilization, and 1 water truck with 25% utilization. This was based upon a 5 day-10 hour calendar for overtime calculations.





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The VE proposal will not change the make-up of the crew or equipment needed to perform the work. My expectation of savings is based upon performing the work in 5.5 shifts per half, a savings through efficiency of 1.5 shifts per half with a total reduction in labor and equipment of 3.0 shifts, or 30 crew hours (21% reduction in labor and equipment costs). The only upcharge was a modification from the 5 day-10 hour calendar to a 6 day-12 hour calendar for overtime calculations due to the increased magnitude of work to be completed within a 5 calendar day period which would require additional overtime to complete each task and reduced flexibility in the scheduling of the work. The upcharge for this was approximately \$3,000 per half. The total net savings from the labor and equipment for this item was \$18,144 which compares well to the approximate \$750 / hour cost of the crew represented in the 30 crew-hour reduction.

This item also contained the cost of the overlay accessories, sundry materials, and subcontractor sawing, which will not be affected by this VE proposal.

With this letter APAC-Missouri, Inc. submits a modification in the unit price of this item from \$20.96 / SY to \$18.35 / SY with the accepted VE proposal.

### Item 270 – Coldmilling >3" Thick

This item had two activities – mobilization and milling. The original activity for mobilization to the site allowed for 4 mobilizations in 12 crew hours made with 4 permits, 2 operators, 1 foreman, 1 driver, 1 tractor-trailer, 1 service truck, and 1 pickup for a total cost of \$5,000. The VE proposal will reduce this to a 2 mobilization requirement, cutting all of the above in half for a savings of \$2,500.

The milling operations crew is 1 foreman, 2 drivers, 2 general laborers, and 3 operators with 1 pickup truck, 1 broom, 1 milling machine, 1 skid steer, 1 street sweeper, and 1 service truck at an approx. cost of \$1,250 per hour.

The plan activity for the 7352 SY of milling was 26 crew hours – 2 hours for the 400 SY at the RR bridge and 6 hours per quadrant. The VE proposal to halves will reduce this to 20 crew hours – 2 hours for the 400 SY at the RR bridge and 9 hours per half, creating a savings of 6 crew hours or approximately \$7,500. There is also a reduction in the cost of trucking for milled material from 100 truck-hours to 90 truck-hours with a savings of \$1,000.

The total savings from the labor and equipment for this item was \$11,028. With this letter APAC-Missouri, Inc. submits a modification in the unit price of this item from \$5.01 / SY to \$3.51 / SY with the accepted VE proposal.

### Item 290 – Geotextile Fabric, Type 1

The installation of the geotextile fabric was originally planned with 3 general laborers in 8 hours per quadrant for a total of 32 crew hours. The VE proposal is expected to reduce this to 12 hours per half for a total of 24 crew hours. This 25% reduction in labor results in a savings of \$1,100. With this letter APAC-Missouri, Inc. submits a modification in the unit price of this item from \$2.33 / SY to \$ 2.17 / SY with the accepted VE proposal.

The total savings generated by this VE proposal is \$30,284 to be split 50-50 between APAC-Missouri, Inc. and MoDOT.





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3) Here is a step-by-step process from which each half will be constructed:

### ONE HALF OF INTERSECTION

- Install the traffic control to keep traffic out of the work area.
  - Set string lines for milling control on Route 24
  - Mill Route 24 to the desired profile end to end
  - Set string lines for milling control on Bus. 63
  - Mill Bus. 63 to the desired profile end to Route 24
  - Clean the milled surface of Route 24
  - Install geotextile on Route 24
  - Mill the two turning radii from island to edge line
  - Clean the milled surface of Bus. 63 and radii
  - Install geotextile on Bus. 63 and radii
  - Set the paving string lines along Route 24 end to end
  - Set the paving rail and paving machine on Route 24 end to end and check paving thicknesses
  - Pour the unbonded overlay on Route 24 end to end
  - Saw the joints in the overlay on Route 24 end to end
  - Remove the paving string line and paving rails from Route 24
  - Set the paving string lines along Bus. 63 end to Route 24
  - Set the paving rail and paving machine on Bus. 63 end to Route 24 and check paving thicknesses
  - Pour the unbonded overlay on Bus. 63 end to Route 24
  - Saw the joints in the overlay on Bus. 63 end to Route 24
  - Remove the paving string line and paving rails from Bus. 63
  - Set the paving rails on the radii
  - Pour the unbonded overlay on the radii
  - Saw the joints in the overlay on the radii
  - Cleanup concrete surface on Route 24, Bus. 63, and radii
  - Remove equipment and supplies from the work area
  - Ensure final strength necessary to open the roadway to traffic
  - If necessary, place temporary asphalt wedges to bridge traffic onto new concrete from old roadway
  - Remove the traffic control or switch the traffic control to the next half – open new concrete to traffic
- 4) I do not anticipate any additional signs or traffic control devices necessary for the work area. Simply put, the only modification to the traffic control plan will be to not allow right turns into the work area from Route 24 or through traffic on Bus. 63 into the work area. This will be done with channelizers and barricades in nearly the same configuration. I have provided a sketch with this letter as a suggestion, but the traffic control plan to be used must be provided by MoDOT.
- 5) I don't have an objection to a lump sum modification to the contract based upon the price reductions and VE split.





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I expect to send the details of the proposed alignment from Crocket Engineering for your review later today.

If there are any other details I can provide at this time, please call me at 573-228-7078.

Sincerely,

APAC-Missouri, Inc.

David B. Tag, P.E.  
Area Manager  
APAC-Missouri, Inc.

CC: Jobfile







# VALUE ENGINEERING CHECK SHEET

JPD  
4/30/10

## TYPE OF WORK

(Check one that applies)

- ☐ Bridge/Structure/Footings
- ☐ Drainage Structures (RCP, RCB, CMP's, ect.)
- ☒ TCP/MOT
- ☐ Paving (PCCP, ect.)
- ☐ Grading/MSE Walls
- ☐ Signal/Lighting/ITS
- ☐ Misc. \_\_\_\_\_

## SUMMARY OF PROPOSAL

(If needed, condense summary to a couple of lines)

THIS VE SIMPLIFIES TRAFFIC CONTROL BY SPLITTING  
THE WORK INTO HALVES, INSTEAD OF QUARTERS, AND  
REDUCING THE WORK SCHEDULE. CLOSURE OF BUS 63  
WILL BE NECESSARY DURING CONSTRUCTION, HOWEVER.

## SCANNING OF DOCUMENT

If the proposal is large, please mark or make note, which pages need to be scanned into the database. If there are special instructions, make note of them here.

\_\_\_\_\_  
\_\_\_\_\_  
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